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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,804	06/30/2003	Nobuko Yamamoto	03500.015716.1	2559

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EXAMINER	
BAUSCH, SARAE L	
ART UNIT	PAPER NUMBER
1634	

MAIL DATE	DELIVERY MODE
11/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/608,804	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Sarae Bausch	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *74-77* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *74-77* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *05/07, 10/07*.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Currently, claims 74-77 are pending in the instant application. Claims 1-73 have been canceled. This action is written in response to applicant's correspondence submitted 08/14/2007. All the amendments and arguments have been thoroughly reviewed but were found insufficient to place the instantly examined claims in condition for allowance. The following rejections are either newly presented, as necessitated by amendment, or are reiterated from the previous office action. Any rejections not reiterated in this action have been withdrawn as necessitated by applicant's amendments to the claims. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. **This action is Final.**

2. The response thanked the Examiner for the telephone interview, attached is the interview summary of the telephone interview conducted on 5/31/2007.

Maintained Rejections

Claim Rejections - 35 USC § 112- New Matter

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 74-77 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed

invention. This rejection was previously presented in the office action mailed 05/16/2007 and is reiterated below.

Claims 74-76 with the recitation of "side length from 500 μm to 6 mm" and claim 77 with the recitation of "side length of the square section is 2 mm" is not supported in the specification and raises the issue of new matter. The specification does not teach a range for the side of a sequare. The specificaiton teaches a matrices with a region of 1mm by 1mm (see substitute specificaiton page 13, line 6), a density of matrices that is a 500 μm square (see page 15, line 20), thickness of the matrix is 1 to 20 μm (see page 19, line 35), spots that are 500, 100, and 20 μm (see page 33, line 25-29), a 6 mm and 1.2 mm square section (see page 34, lines 11-15), and a glass substrate of 60 mm x 50 mm with a well that is 1 mm x 1mm square. The specification provides no indication of the criticality of the amended range and provides no example of any actual assay which demonstrates side lenghts of a square or substrate in the amended range. The specificaiton does not teach a 2mm side length of a square section. There is no support in the specification to use a side length of 500 μm to 6 mm or a side length of 2mm that are arranged in a matrix form having no walls partitioning the sections. As discussed in MPEP 2163.05, section III, with respect to changing numerical range limitations, the analysis must take into account which ranges one skilled in the art would consider inherently supported by the discussion in the original disclosure. Purdue Pharma L.P. v. Faulding Inc., 230 F.3d 1320, 1328, 56 USPQ2d1481, 1487 (Fed. Cir. 2000) ("[T]he specification does not clearly disclose to the skilled artisan that the inventors... considered the... ratio to be part of their invention.... There is therefore no force to Purdue's argument that the written description requirement was satisfied

because the disclosure revealed a broad invention from which the [later-filed] claims carved out a patentable portion").

Claims 74-77 with the recitation "having no walls partitioning the sections" is not supported in the specification and raises the issue of new matter. The specification teaches a detection substrate with sections separated by wells (walls) of the frame structure matrix patterns (see page 28, line 35-36). The specificaiton discloses the use of a hydrophobic wall on the detection substrate (See page 29, lines 1-5 and page 41, lines 10-15).. The specification further exemplifies the rectangular sections are each spatially isolated by matrix components that with surrounding walls (see page 31, line 13-16). The specificiaotn does not disclose the use of a substrate that has square sections that are arranged in a mtric form on a solid substrate that has no walls partitioning the sections. There is no support in the specification to use a substrate without walls. The specification is limited to a substrate that is made of walls and wells.

Response to Arguments

5. The response thanked the examiner on page 4 of the response mailed 08/14/2007 for the interview conducted subsequent to the office action mailed 05/16/2007. The response stated that the examiner agreed that the specification as filed supports the recitation in claim 74 regarding the side length of the square sections. It is noted that the examiner agreed that the specification has support for the individual side lengths of the square sections, particularly 1 mm, 1.2 mm, 2 mm and 6 mm however the specification does not have support for a range of side lengths. An interview summary is attached for the interview conducted on 05/31/2007. As stated above, the specification does support individual side lengths however the specification does not disclose a range of side lengths.

The response traverses the rejection on pages 4-5 of the response mailed 08/14/2007. The response asserts that MPEP 2163 states that the specification can provide adequate support for a claim amendment by implicitly or inherently disclosing an added feature. The response asserts that the specification on page 14, line 35 to page 15 line 8 discloses that while the shapes of the matrix patterns are not limited linear, square and rectangular patterns are preferable and shapes such as circles and ellipses will cause no problems with respect to convenience at the time of supplying specimens on the created substrate. The response asserts that the description teaches that the shape of the matrix patterns is preferably simple rather than complex or irregular. This response has been thoroughly reviewed but not found persuasive. The specification on pages 14-15 provides support for the shapes of the matrix or defined regions on the substrate however the specification on pages 14-15 does not provide for the type of walls present or the lack of walls present on the substrate. Furthermore, it is clear from pages 14-15 of the specification that walls are part of the contemplated invention as pages 14-15 does not contemplate that the matrix or substrate is without partitioning walls. The specification and in particular, pages 14-15 do not provide support, even implicitly that the matrix is without partitioning walls.

The response asserts that the specification on page 17, line 27 to page 18 line 7 discloses that the probe solution is put on separated matrix to carry out a coupling reaction and it is preferable that portion constituting the well are hydrophilic while portions corresponding to the wall surface of the well and the partition between the well and a neighboring well are composed of materials whose surfaces are less compatible with the probe solution. The response asserts that from example 1 it is evident that the black matrices (wells) are needed because a DNA

solution is manually injected. The response points to example 3 and page 23, lines 16- 21 and asserts that it is evident that no matrix or partition wall is needed in example 3 for preventing the discharged liquid from flowing into an adjacent section in the case of using an ink-jet head and assert that this inherent advantage does not violate the prohibition against introduction of new matter. The response asserts that the skilled artisan clearly understands that example 3 discloses a structure without any partition walls since such are not needed. The response further asserts that the partitioning walls would be contrary to the preference for a simple structure disclosed in the specification and therefore the specification provides support for "no walls partitioning the sections". This response has been thoroughly reviewed but not found persuasive. Page 23, lines 16-21 discussed the discharge ability of a inkjet and the density of which to spot on a solid phase, however the specification does not discuss the presence or absence of partitioning walls. Furthermore example 3 does not discuss the presence or absence of partitioning walls or the lack of need of a partitioning wall. Example 3 describes preparing a substrate with an oligonucleotide bound to a glass substrate. Example 3 is silent with regard to walls being present on the glass substrate. It is not evidence from example 3 that no matrix or partition wall is needed as example 3 does not address preventing the discharged liquid from flowing into an adjacent sections. There is no inherent advantage disclosed by Example 3 that would allow the skilled artisan to know or understand that example 3 discloses a structure without nay partitions walls. Example 3 does not address that walls are not needed. As stated in MPEP, section 2173.05(i) , "Any negative limitation or exclusionary proviso must have basis in the original disclosure. If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See In re Johnson, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) ("[the]

specification, having described the whole, necessarily described the part remaining."). See also Ex parte Grasselli, 231 USPQ 393 (Bd. App. 1983), aff 'd mem., 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Note that a lack of literal basis in the specification for a negative limitation may not be sufficient to establish a prima facie case for lack of descriptive support. Ex parte Parks, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993). See MPEP § 2163 - § 2163.07(b) for a discussion of the written description requirement of 35 U.S.C. 112, first paragraph". As such the negative limitation of "no walls partitioning the sections" is not supported by the specification because the absence addressing whether the substrate has walls in example 3 of the specification does not provide support for "no walls partitioning the sections". Furthermore, the specification clearly contemplates partitioning walls as the specification discloses the structure of the matrices are composed of hydrophobic walls and hydrophilic wells (see pg. 41, lines 23-36)

For these reasons, and the reasons made of record in the previous office actions, the rejection is maintained.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 74-75 and 77 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown (US Patent 5807522 Sep. 1998). This rejection was previously presented in section 5 of the office action mailed 05/16/2007 and is reiterated below.

With regard to claims 74-75, Brown et al. teach a method of detecting differential expression of each of a plurality of genes in a first cell type with respect to expression of the same genes in a second cell type (see column 4, lines 52-59). Brown et al. teach mixtures of labeled cDNA from the two cell types is added to an array of polynucleotides representing a plurality of known genes (component from at least two liquid test samples) (see column 4, lines 60-63). Brown et al. teach the array is examined by fluorescence to determine the relative expression of known genes in the two cell types by each spot (determining whether the object component is contained in each of the two liquid test samples) (see column 4, lines 64-67 and column 5, lines 1-5). Brown et al. spotting polynucleotides of about 50 bp on the array surface and a small volume of labeled DNA probe mixture (at least two liquid test samples) in a standard hybridization solution is loaded onto each cell and incubation at appropriate temperatures for hybridization by reaction with detection reagents and analyzed using calorimetric, radioactive, or fluorescent detection (see column 13, lines 10-46). Brown et al. teach 100 DNA fragments representing all known mutations of a given gene fabricated on an array (fixing plural types of oligonucleotides having known base sequence different from one another). Brown et al. teach an array of regions on a solid support comprising a two dimensional array with discrete regions having a finite area (see column 6, lines 29-32) and teach the 96 cell array is about 1 to 30 mm in width and 1 to 50 mm in length (claim 77) (see column 11, lines 62-67). Brown et al. teach the array is formed in a plurality of analyte-specific reagent regions, each region may include a

different analyte-specific reagent and teach the 96 microarrays assayed with 96 patient samples are incubated, rinsed, detected, and analyzed using standard calorimetric, radioactive, or fluorescent detection and teaches the process can be reversed where the patient or organism's DNA is immobilized as the array elements and each array is hybridized with a different mutated allele or genetic marker (claim 75) (see column 15, lines 18-51).

Response to Arguments

8. The response traverses the rejection on page of the response mailed 08/14/2007. The response asserts that Brown does not suggest spotting a predetermined liquid amount of each of the test samples in each section in such a manner that individual spots are sufficiently spaced from each other to conduct a complex-forming reaction between the oligonucleotide and the object component in each spot. The response asserts that it is schematically demonstrated in figure B. This response has been thoroughly reviewed but not found persuasive. The claims require spotting a test sample in each square section such that individual spots are sufficiently spaced from each other to conduct a complex –forming reaction. The claims are not limited nor require that each test sample is spotted separately or that the spots are not contact with each other, as depicted in figure A submitted on by the response 08/14/2007, the claims merely require that two test samples at a predetermined liquid amount are spotted in the square section and require that the individual spots, which could encompass the entire substrate or square, are sufficiently spaced in order to conduct a complex-forming reaction between the oligonucleotides and the object component in each spot, as depicted in figure B submitted on 08/14/2007. As such, Brown et al. teach spotting a predetermined liquid amount of two test samples, Brown et al. teach cDNA products from wild type Arabidopsis and transgenic line of Arabidopsis are spotted

together on an array in 10 microliter hybridization reaction. Brown et al. teach detection of HAT4 gene in the transgenic line but not wild type Arabidopsis and therefore Brown et al. teach the spotting of the predetermined liquid amount of the two test samples were sufficiently spaced in order to conduct a complex forming reaction (see example 2, column 17, lines 55-67 and column 18 lines 5-17).

For these reasons, and the reasons made of record in the previous office actions, the rejection is maintained.

9. Claims 74-76 are rejected under 35 U.S.C. 102(b) as being anticipated by Southern et al. (US Patent 5700637 published Dec. 23 1997). This rejection was previously presented in section 7 of the office action mailed 05/16/2007 and is reiterated below.

With regard to claim 74-76, Southern et al. teach an apparatus and method for analyzing a polynucleotide sequence of a known or unknown sequence. Southern et al. teach an apparatus comprising a support and attached to the surface a complete set of oligonucleotides of chosen lengths occupying separate cells and being capable of taking part in hybridization reactions (object component capable of binding to the oligonucleotide) (see column 1, lines 35-47). Southern et al. teach the use of a support by applying labeled material under hybridization conditions to the array to observe the location of the label on the surface associated with particular members of the oligonucleotides (see column 1, lines 52-60). Southern et al. teach preparing a substrate with a plurality of regions (squares) and teaches stripes that 1mm long (side length) (see column 14, lines 48-50). Southern et al. teach the spots can be laid down with a low cost ink jet printer (see column 6, lines 53-56) (claim 76). Southern et al. teach that adding a plurality of oligonucleotides with two different bases in a rectangular patch on the substrate

(fixing plural types of oligonucleotides having known base sequences different from one another and present at a uniform surface density in each section) (claim 75) (see column 10, lines 1-6 and example 3). Southern et al. teach preparing clinical samples of three different DNA samples and applying these probes in liquid sample to the surface carrying six oligonucleotide strips and detecting the hybridization signal (detecting whether a complex formed between the oligonucleotide and object component) (see column 12, lines 1-23, example 6).

Response to Arguments

10. The response traverses the rejection on 7 of the response mailed 08/14/2007. The response asserts that Southern does not spot a predetermined liquid amount of each of the test samples in each section in such a manner that individual spots are sufficiently spaced from each other to conduct a complex-forming reaction between the oligonucleotide and the object component in each spot. This response has been thoroughly reviewed but not found persuasive. The claims are not limited to the spots that are not in contact with each other nor do the claims require that each test sample spotted in individual spots not be in contact with each other. The claims merely require spotting a predetermined liquid amount of the two test samples in each square section of the substrate so that the spots are sufficiently spaced from each other to conduct a complex forming reaction. The claims do not require that each test sample is individually spotted and not contacting each other nor do the claims require spotting the test samples at different locations within the square section. Furthermore, the spots can encompass the entire square section or the entire substrate, the claims do not limit the type of spot. Therefore, Southern et al. anticipates the claimed invention as Southern et al. teach preparing clinical samples of three different DNA samples and spotting these probes in liquid sample to the surface

carrying six oligonucleotide strips and detecting the hybridization signal, wherein detecting the hybridization signal indicates that the spots are sufficiently spaced from each other to conduct a complex forming reaction (see column 12, lines 1-23, example 6).

For these reasons, and the reasons made of record in the previous office actions, the rejections are maintained.

Conclusion

11. No claims are allowable.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarae Bausch whose telephone number is (571) 272-2912. The examiner can normally be reached on M-F 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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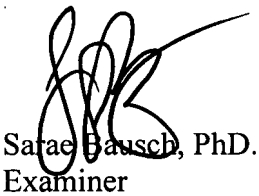

Sarae Bausch, PhD.
Examiner
Art Unit 1634